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ABSTRACT

A baseline geography skills test was administered during 1987 to over 3,000 students who were enrolled in freshmen geography courses at 18 Indiana universities. Known as the National Council for Geographic Education Competency-Based Geography Test, Secondary Level, Form D, this test was used to measure the students' level of geographic ability in: (1) map skills; (2) place-name map identification; (3) physical geography; and (4) human geography. Information was obtained concerning each student's: (1) major area of study; (2) home state of residence; (3) class status; (4) other U.S. and foreign residencies; (5) excursions outside of the home state; (6) sex; (7) age; (8) ethnic group; (9) reasons for taking the course; and (10) previous geographic education. Findings indicated that a low overall level of geographic skills and knowledge exists and that these students averaged test scores of 75 percent correct on place-name map identification, 70 percent on map skills, 63 percent on human geography, and 58 percent on physical geography. Along with overall ability, factors such as age, major area of study, frequency of travel, number of places visited outside the home state, and reasons for taking the course positively influenced the level of geographic skills and knowledge. Four references are included. (JHP)

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BASELINE GEOGRAPHY COMPETENCY TEST ADMINISTERED IN INDIANA UNIVERSITIES

by

Frederick L. Bein, Ph.D.

Paper presented at annual meeting of the
Association of American Geographers
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BASELINE GEOGRAPHY COMPETENCY TEST ADMINISTERED IN INDIANA UNIVERSITIES

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BASELINE GEOGRAPHY COMPETENCY TEST administered in Indiana universities by Frederick L. Bein, Department of Geography, Indiana University, Indianapolis, Indiana 46202.

A baseline geography test was administered to over 3,000 Indiana college students enrolled in introductory geography courses. The National Council for Geographic Education Competency-Based Geography Test, Secondary Level, Form D, was used to measure the 1987 level of geographic ability in the area of map skills, place name location, physical geography, and human geography. Personal information gathered from each respondent included age, sex, ethnicity, past travel experience, and past geographic education. Older students were expected to score better on the NCGE test while geographically bound groups are expected to score lower. A strong correlation exists between travel and geographic skill. Findings show a low overall geographic ability and that factors of age, ethnicity and travel experience influence certain aspects of geographic knowledge and skills.

A geographic skills test was administered during the 1987 Fall Term at 18 Indiana institutions* of higher education. Over 3,000 students enrolled in freshman geography courses were examined with respect to knowledge of map skills, place-name geography, physical geography and human geography. The Competency-based Geography Test, Secondary Level Form II, by the National Council for Geographic Education (NCGE) was employed and administered by the Geography Educators Network of Indiana (GENI). GENI endeavors to use the results of the tests as a base-line to measure for future gains in geographic understanding. The test was financed by the National Geographic Society, George F. Cram Corporation the Indiana University at Indianapolis Computing Center and the National Council for Geographic Education.

*Participating institutions included: Ball State University, Butler University, DePauw University, Indiana State University, Indiana University (Bloomington, Fort Wayne, Gary, Indianapolis, Columbus and New Albany Campuses), Notre Dame, Purdue University, Purdue North Central, Taylor University, Tri-State University, University of Indianapolis, Valparaiso University and Vincennes University.

Paper presented at annual meeting of the Association of American Geographers, Phoenix, Arizona, April 6-10, 1988.

Geographic knowledge and skill is a major deficiency among U.S. residents, a serious problem given the intricate global networks which exist and the world leadership role of the U.S. This lack of geographic ability also does not serve the localized Indiana need for its citizens to be more globally sensitive. The conversion of Indiana's traditional industrial-based economy to a modern highly automated economy will depend on its ability to more effectively enter and develop foreign market relationships. The future of Indiana and its economy will depend in part upon its ability to develop a better international perspective to enable more effective participation in the world economy.(1)

In the last ten years numerous studies have documented the general lack of geographic abilities among American students. These include (to name a few) a state wide study in Kentucky by Stan Brun and others (2), studies by Cross (3) and Helgren (4). A similar study in Indiana in 1985 documented the lack of place- name geography among Indiana college freshmen.(1)

These previous studies predominantly examine place-name geographic knowledge, which in itself is worthwhile but does not reveal the extent of knowledge of conceptual geography. Because of this limitation it was decided to administer a test in Indiana which also measured spatial thinking abilities. The NCGE Competency-based geography test, Secondary Level Form II, was adopted for this study.

It was decided to group the seventy-five questions of the NCGE test into four categories which could be generally associated with different geographic skills. Questions 1-8 were designated as map skills and 9-20 as map place-name identification. Questions 21-40, Part II of the format, were already designated as physical geography and adequately served the purpose of the test. Part III or "Human Geography" made up questions 41-75 which

were also kept as a separate group. By computerizing the results it would be possible to determine differences in abilities over the four areas.

Personal information questions were designed by the Geography Educators Network of Indiana to accompany the NCGE test. This data was designed to be collected on the same computer answer form used for the competency test. This information was used to determine if certain segments of the population were receiving inadequate education. Ultimately this would be used to make recommendations to the State of Indiana. Questions asked concerned: study concentration, state of residence, class status, number of states and countries lived in, number of times traveled to states and countries outside your home state, sex, age, ethnic group, reason for taking the course, previous geography courses in high school or in college.

Preliminary results show that the 3,382 Indiana students scored best on the place-name map identification with 75% correct. With decreasing ability, they scored 70% on map skills, 63% on human geography and 58% on physical geography. Specific results follow, showing extremes on each of the four sections.

Table I: The highest and lowest average item scores of 3,382 Indiana college students on the NCGE Secondary Competency-based Geography Test, 1987.

Map Skills

43% have misconception that a river cannot flow north.

48% understand latitude and longitude.

87% are able to tell directions and distances on a map.

Place-name Identification

51% know the Sahara Desert is located in North Africa.
54% know the conceptual difference between Central and Latin America.
61% can identify Egypt on a map.
66% can locate Israel on a map.
72% can identify Japan on a map.
94% can identify Australia and the Soviet Union on a map.

Physical Geography

63% understand that soil erosion occurs on steep slopes.
35% know that the Soviet Union has abundant natural resources while 53% think that they are severely limited.
92% know that Mexico has a warmer climate than Canada, USSR and U.K.

Human Geography

74% know that the same language is spoken in the United Kingdom that is spoken in the U.S.
There is little awareness of dominant religions around the world:
39% know that Islam is the dominant religion in Middle East.
66% know that Buddhism is concentrated in Asia.

The next step in the analysis involves the correlation of the student test performances with the personal information. Composite percentage scores were derived for the four areas of the test: map skills, map identification, physical geography and human geography. These scores were compared for the different demographic groups to see if certain segments of our population were not receiving as much geographic education as others. In no way would these results be interpreted as measures of geographic aptitude. Student T, Tukey, and Scheffe statistical tests were used to determine significant differences at the 95% level of confidence for different student groups. Highlights reveal some variations among the sampled population.

It was found that Arts and Science students score significantly higher than do other students. Perhaps this is because of interest and background of the students, but also because general interest orientation of Arts and Science curriculums would include more geography.

The tests of class status show no significance statistically between Freshmen, Sophomores, Juniors, and Seniors, although there was a tendency for the more advanced students to score slightly higher.

Experience outside of the student's home state was thought to have had an influence on geography skills. Three types of data were gathered to measure this. Students were asked:

a) In how many states or countries have you lived?

b) How many times have you traveled outside of your home state?

c) In how many states and countries have you traveled?

There is no statistical significance for the first question. Scores are not significantly higher for those who have lived in a number of places than those who have not.

Frequent travelers (13 plus trips) have better geographic abilities than those who have not traveled, but the difference is slight for those who have traveled a few times.

The greatest statistical significance occurs in regard to the number of places students have visited outside of their home states. Apparently geographic abilities are acquired, not by living in many different places, so much as by traveling to a large number of places. Frequent travelers returning to the same place time and time again may be spending little time learning the geography rather than visiting family.

Students who had previous geography courses would be expected to score better on the test. This did not prove to be statistically different for those students who had high school geography. But, for students with at least one university geography course, scores were significantly higher than those who had none. Additional university courses did not seem to increase significantly the score values.

It was expected that students taking the geography course in which the test was administered as an elective would score higher than those for whom the course was a requirement. This proved to be true at the 95% level of probability.

This seems to agree with the boring - interesting evaluations with which students associated their previous geography courses. Students who identified their previous geography as boring scored significantly lower than those who thought their previous geography to be interesting. This applies to both high school and college geography courses.

Differences between males and females are significantly pronounced on the test results. Males score higher than females. This should not be interpreted as a difference in aptitude but as a difference in exposure to geography. I think many cultural factors encourage males to acquire more geography. As noted above "travel," the strongest contributor to geographic skills, may be more accessible to men than to women. And since previous high school geography seems to have no effect on geographic ability there would be no exposure advantage for women to have had geography in high school. This is an area which needs more followup.

The factor of age was examined to see if differences occurred. In parts of the test this proved to be true. For physical geography and human geography, older people score significantly better, but this was not true for map skill and map identification abilities where no difference can be determined. Further study needs to be pursued by isolating the factor of travel and rerunning the statistics. In other words older people have had more opportunity to travel and would score better because of their travel grather than age.

This study provides us an opportunity to examine our student populations from a number of aspects. Not only does it provide baseline level of geographic understanding for future comparisons, it has allowed us to look at different segments of our population to see where geography is more or less available to certain students. Some of the data needs further examination and refinement.

It is interesting to note that some strong statements can be made at this point. Certain factors have more significance in determining higher scores on the geography test. Most notable is the influence of travel on high scores and the lack of influence high school geography has on the scores. This may tell us something about Indiana High school geography courses, but it also says much about geography being an experiential discipline, at least with respect to the array of questions on the N.C.G.E. test.

1) Bein, F. L., Stephen Kitley and Roger Stough. "Geographic Knowledge Based on Place-Name Test Given to Students at Fifteen Indiana Universities," Indiana Academy of the Social Sciences, Vol. XXI, 1986. pp. 46-56.

2) Brun, Stanley, et al. Geography Test Given Students in Seven Kentucky Universities, Department of Geography, University of Kentucky, Lexington, KY, 1983.

3) Cross, John A., "Factors Associated with Students' Place Locations Knowledge," Journal of Geography, Vol. 86, 1987. pp. 59-63.

4) Helgren, D. M., "Place Name Ignorance in National News," Journal of Geography, Vol. 82, 1983. pp. 176-178.